

IN THE CLAIMS

Please amend the claims as indicated in the following listing of claims, which replaces all previous listings of claims.

1-63. (Cancelled)

64. (Currently Amended) An enzyme mixture comprising a first enzyme and a second enzyme, wherein said first enzyme comprises a polymerization activity of a 5'- 3' polymerization activity of a DNA polymerase or reverse transcriptase, said second enzyme is a mutant Archaeal DNA polymerase, said DNA polymerase comprising the partitioning domain sequence YXGG (SEQ ID NO:6), the polymerase domain sequence DXXSLYP (SEQ ID NO:1), the polymerase domain sequence YIDTDG (SEQ ID NO:21), and the polymerase domain sequence KXY, and further comprising a 3'- 5' exonuclease activity and a reduced DNA polymerization activity, wherein the mutant Archaeal DNA polymerase comprises a mutation an amino acid substitution at an amino acid position selected from the group consisting of amino acid positions corresponding to D405, Y410, T542, D543, K593, Y595, Y385, G387, and G388 of Pfu DNA polymerase, wherein said second enzyme possesses 3' - 5' exonuclease activity and reduced 5' - 3' DNA polymerization activity.

65. (Currently Amended) The enzyme mixture of claim 64, wherein said mutant DNA polymerase is derived from a DNA polymerase selected from the group consisting of: Thi

DNA polymerase (Vent DNA polymerase), PGB-D (Deep Vent) DNA polymerase, Tgo DNA polymerase, Pfu DNA polymerase, KOD DNA polymerase, and JDF-3 DNA polymerase having the sequence of SEQ ID NO. 10.

66 - 69. (Cancelled)

70. (Currently Amended) The enzyme mixture of claim 67, wherein said Pfu DNA polymerase contains a mutation of the amino acid substitution G387P.

71. (Currently Amended) The enzyme mixture of claim 64 [[68]], wherein said mutant DNA polymerase is a mutant KOD DNA polymerase from the species *Pyrococcus kodakaraensis* comprising an amino acid substitution, and said mutant KOD DNA polymerase contains a mutation at an amino acid position selected from the group consisting of Y384, G386, G387, D404, T541, D542, and K592.

72. (Currently Amended) The enzyme mixture of claim 71, wherein said mutant KOD DNA polymerase contains a mutation of G387P.

73. (Currently Amended) An enzyme mixture comprising a first enzyme and a second enzyme, wherein said first enzyme is a DNA polymerase, said second enzyme is a mutant JDF-3 DNA polymerase in which JDF-3 having the sequence of SEQ ID NO. 10 comprising an

amino acid substitution at an amino acid position selected from the group consisting of amino acid positions corresponding to Y410, T542, D543, K593, Y595, Y385, G387, and G388 of Pfu DNA polymerase is mutated.

74. (Currently Amended) The enzyme mixture of claim 73, wherein said ~~mutant~~ JDF-3 DNA polymerase contains ~~a mutation~~ an amino acid substitution at an amino acid position corresponding to mutation of G387 of Pfu DNA polymerase.

75. (Currently Amended) The enzyme mixture of claim 64, wherein said first enzyme and said second enzyme are ~~derived from~~ two different ~~Archaeal~~ DNA polymerases.

76. (Currently Amended) The enzyme mixture of claim 75, wherein said first enzyme is wild type KOD or wild type JDF-3 DNA polymerase having the sequence of SEQ ID NO. 10, and said second enzyme is a ~~mutant~~ Pfu DNA polymerase from the species Pyrococcus furiosis.

77. (Currently Amended) The enzyme mixture of claim 76, wherein said ~~mutant~~ Pfu DNA polymerase from the species Pyrococcus furiosis contains ~~a mutation~~ an amino acid substitution at amino acid G387.

78. (Currently Amended) The enzyme mixture of claim 77, wherein said ~~mutant Pfu~~ DNA polymerase from the species *Pyrococcus furiosus* contains the amino acid substitution a mutation of G387P.

79. (Currently Amended) The enzyme mixture of claim 75, wherein said first enzyme is wild type Pfu DNA polymerase, and said second enzyme is ~~a mutant KOD or mutant JDF-3~~ DNA polymerase or a DNA polymerase from the species *Pyrococcus kodakaraensis*.

80. (Currently Amended) The enzyme mixture of claim 79, wherein said ~~mutant KOD or mutant JDF-3~~ DNA polymerase or DNA polymerase from the species *Pyrococcus kodakaraensis* contains a mutation of an amino acid substitution at amino acid position G387.

81. (Currently Amended) The enzyme of claim 80, wherein said ~~mutant KOD or mutant JDF3~~ DNA polymerase or DNA polymerase from the species *Pyrococcus kodakaraensis* contains a mutation of an amino acid substitution at amino acid position G387P.

82. (Previously Presented) The enzyme mixture of claim 67, wherein said first enzyme is Taq DNA polymerase.

83 - 84. (Cancelled)

85. (Currently Amended) A kit comprising an enzyme mixture comprising a first enzyme and a second enzyme, wherein said first enzyme comprises a polymerization activity of a 5' - 3' polymerization activity of a DNA polymerase or reverse transcriptase, said second enzyme is a mutant Archaeal DNA polymerase, said DNA polymerase comprising the polymerase domain sequence DXXSLYP (SEQ ID NO:1), the polymerase domain sequence YIDTDG (SEQ ID NO:21), and the polymerase domain sequence KXY, and further comprising a 3' - 5' exonuclease activity and a reduced DNA polymerization activity, wherein the mutant Archaeal DNA polymerase comprises a mutation an amino acid substitution at an amino acid position selected from the group consisting of amino acid positions corresponding to D405, Y410, T542, D543, K593, Y595, Y385, G387, and G388 of Pfu DNA polymerase, wherein said second enzyme possesses 3' - 5' exonuclease activity and reduced 5' - 3' DNA polymerization activity, and packaging material therefor.

86. (Currently Amended) The kit of claim 85, wherein said second enzyme is A kit comprising an enzyme mixture comprising a first enzyme and a second enzyme, wherein said first enzyme is a DNA polymerase, said second enzyme is a mutant Archaeal DNA polymerase comprising a 3' - 5' exonuclease activity and a reduced DNA polymerization activity, wherein said mutant Archaeal DNA polymerase comprises a mutation at a position as indicated in Tables 2A and 2B, and packaging material therefor, wherein when said mutant Archaeal DNA polymerase comprising a 3' 5' exonuclease activity and a reduced DNA polymerization activity is a mutant Pfu DNA polymerase, said DNA polymerase comprising the partitioning domain

sequence SYTGGF (SEQ ID NO:7), the polymerase domain sequence DXXSLYP (SEQ ID NO:1), the polymerase domain sequence YIDTDG SEQ ID NO:21), and the polymerase domain sequence KXY, and further comprising an amino acid substitution, and said mutant Pfu DNA polymerase contains a mutation at an amino acid position selected from the group consisting of Y410, T542, D543, K593, Y595, Y385, G387, and G388 amino acid positions of Pfu DNA polymerase, and wherein said second enzyme possesses 3' - 5' exonuclease activity and reduced 5' - 3' DNA polymerization activity.

87. (Previously Presented) The kit of claim 85 or 86, further comprising a reagent selected from the group consisting of: dNTPs, reaction buffer, primer, and DNA enhancing factor.

88. (Currently Amended) The enzyme mixture of claim 74, wherein said mutant JDF-3 DNA polymerase contains the amino acid substitution a mutation of G387P.

89. (Currently Amended) The enzyme mixture of claim 64 [[68]], wherein when said second enzyme is a mutant DNA polymerase comprising a mutation in its partitioning domain or polymerase domain is a mutant Tgo DNA polymerase from the species *Thermococcus gorgonarius*; said mutant Tgo DNA polymerase contains a mutation and comprises an amino acid substitution at an amino acid position selected from the group consisting of: D404, T541, D542, K592, Y384, 0386, and G387.

90. (Currently Amended) The enzyme mixture of claim 89, wherein said mutant Tgo DNA polymerase second enzyme contains the amino acid substitution a mutation of G386P.

91. (Currently Amended) The enzyme mixture of claim 64 [[68]], wherein when said second enzyme is a mutant DNA polymerase comprising a mutation in its partitioning domain or polymerase domain is a mutant Tli (Vent) DNA polymerase from the species *Thermococcus litoralis*, said mutant Tli (Vent) DNA polymerase contains a mutation and comprises an amino acid substitution at an amino acid position selected from the group consisting of: D405, T544, D545, K595, Y387, G389, and G390.

92. (Currently Amended) The enzyme mixture of claim 91, wherein said mutant Tli (Vent) DNA polymerase second enzyme contains the amino acid substitution a mutation of G389P.

93. (Currently Amended) The enzyme mixture of claim 64 [[68]], wherein when said second enzyme is a mutant DNA polymerase comprising a mutation in its partitioning domain or polymerase domain is a mutant PGB-D (Deep Vent) DNA polymerase from the species *Pyrococcus GBD*, said mutant PGB-D (Deep Vent) DNA polymerase contains mutation comprising an amino acid substitution at an amino acid position selected from the group consisting of: D405, T542, D543, K593, Y385, G387, and G388.

94. (Currently Amended) The enzyme mixture of claim 93, wherein said ~~mutant PGB~~
D (Deep Vent) DNA polymerase second enzyme contains the amino acid substitution a mutation
of G387P.

95. (New) The enzyme mixture of claim 64, wherein said second enzyme is a DNA
polymerase from a bacterium in the division Archaea.

96. (New) The enzyme mixture of claim 64, wherein said second enzyme is a DNA
polymerase from the species *Pyrococcus furiosis*.

97. (New) The kit of claim 85, wherein the second enzyme is a DNA polymerase
from a bacterium in the division Archaea.